

STANDARD OPERATING PROCEDURE

Glass Cutter Page 1 of 7	Version: 1.0	Date: 07/18/12	Written by: Whitney Schmidt Reviewed by: Geneva Laurita-Plankis Authorised by: M.A. Subramanian
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Subramanian Research Group, Department of Chemistry, Oregon State University

Chemistry Department Safety Office: Gilbert Hall Room 153
Subramanian Research Group: 7-6750
Emergency Medical Services: 911
Campus Student Health Center: 7-9355
Poison Control: 9-1-800-222-1222
OSU Environmental Health and Safety: 7-2273
Campus Security: 7-7000

DISCLAIMER:

This Standard Operating Procedure (SOP) was developed based on instrument manuals, manufacturer specifications, and laboratory experience to provide guidance to Subramanian Lab users in performing the activities defined in this document, in a consistent and standardized manner. This document does not contain regulatory or statutory requirements unless specified.

The authors of this document have made every attempt to present the information in a clear and concise manner for all users of the Subramanian Lab. However, the Subramanian Lab is not responsible for the misuse or misinterpretation of the information presented in this SOP. Under no circumstances shall the Subramanian Lab be liable for any actions taken or omissions made by users of this SOP.

In general, this document should NOT be used in place of a manufacture's instrument manual, warnings and instructions pertaining to use and safety of the specified equipment. This specific document may be used as a supplement to procedure and quick reference to safety but does not replace the information found with the manufactures documentation for the specified equipment. The Subramanian Lab reserves its right to change or suspend any or all parts of this document.

USE OF Glass Cutter

1. Introduction

This SOP discusses the procedure and safety guidelines for the use of the glass cutting saw located in Gilbert Hall Room 130.

This cutting saw is approved for cutting fused silica and standard laboratory glass tubing or rods.

2. Scope

This procedure applies to all staff, students and visitors of the Subramanian Research Group in the Department of Chemistry at Oregon State University that work in the laboratory and have the potential to use the glass cutting saw.

3. Safety

- Personnel who operate the saw must be trained to understand proper use, maintenance and must never operate alone. Improper handling or use can result in severe body injuries.

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General precautions:

- Personal protective equipment (PPE) including **safety glasses AND face shield**, protective laboratory gloves, closed-toed footwear and laboratory coat must be worn during operation of the glass cutting saw.
- Never use glass cutting station alone.
- Only trained laboratory personnel can operate the apparatus.
- The glass cutting station is only to be used when lectures are not being held in Gilbert Hall Rm. 124. The Subramanian group contact should be notified before weekend use.
- If someone is not available from the Subramanian group for weekend use, the glass cutting station should not be used.
- **Improper use may lead to severe bodily harm or death.**
- Before every use the cutting station must be thoroughly inspected.
 - Rotation of the saw blade manually is necessary to insure proper alignment.
 - Check the drain basin for clogs and remove debris before use.
 - Water must be positioned to run over the cutting edge and material to be cut, realign if necessary, **COOLING of the blade and material is necessary during use.**
- Only approved materials can be cut using this apparatus. **Unapproved materials can result in severe injury and damage to cutting apparatus.**

Risk of injury:

- Fast rotating saw blade.
- Small projectile sharp debris.
- Unapproved material being cut will cause severe damage to self and equipment.

Incident Response:

- If any injury occurs seek immediate first aid or, if necessary, seek medical assistance by calling 911.
- A colleague should be on hand for assistance; never operate cutting saw alone.
- Notify Subramanian group lab contact of any incident after appropriate aid has been received.

5. **Training and Competency**

The trainee must have already mastered an understanding of and have been given the instruction in the use of the glass cutting saw by an approved trainer (the instrument supervisor or any trained member of the Subramanian Research Group). Competency will be assessed by close observation of the trainee by the instrument supervisor or an approved trainer. The training records are attached at the end of this SOP, pg7.

7. **Equipment and Maintenance / Handling**

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Signage

- Signage indicating “Glass cutting in progress, use alternate entryway” must be displayed when saw is in use.

8. Operating Procedures

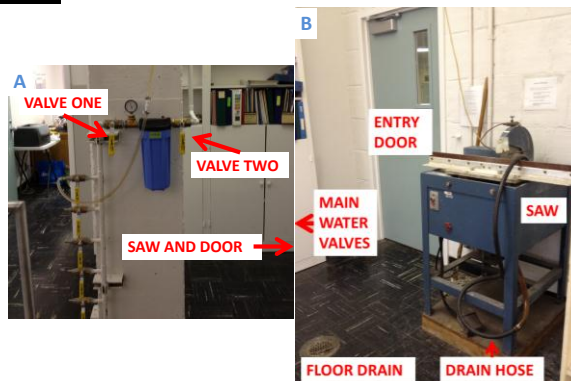


Figure 1. Glass cutting station setup. A) main water valves B) saw and other components.

1. Make sure there is not a lecture in progress in the 124 lecture hall. Luanne in the main office (Gilbert Hall 153) has access to room schedules. This information can also be found on the Oregon State website. DO NOT OPERATE if a lecture is in progress in the 124 lecture hall. DO NOT OPERATE during a course change, 10 minutes is not enough time to operate and follow all procedures properly. An odor may be produced during the process, so use later in the day is preferred.
2. Place sign “Glass cutting in progress, use alternate entry” on the door next to the saw (Figure 1B).
3. Notify persons in the lab or office areas inside room 130 that you will be using the saw.
4. Put on safety glasses, face shield, glass cutting gloves and appropriate lab coat.
5. With saw in the OFF (red STOP button compressed) position (Figure 2), manually inspect blade and that it rotates evenly in the housing. DO NOT OPERATE if saw blade is not aligned properly.



Figure 2. Main power in OFF position. Red STOP button compressed.

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6. Check saw basin drain for any debris or clog. With saw in the OFF (red STOP button compressed) position, remove debris and dispose of waste in a proper container (glass waste or regular garbage).
7. Place drain hose inside of floor drain (Figure 3).

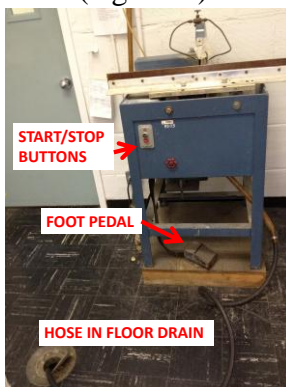


Figure 3. Saw basin drain hose position, power switches and foot pedal positions.

8. Turn on the two water valves attached to the beam across from the saw (Figure 1A). If water does not flow, open the water valve on the saw (Figure 4).
9. Push the guide towards saw and ensure water is properly aligned to cool the blade and materials as it is cutting. Adjust water pipes accordingly.

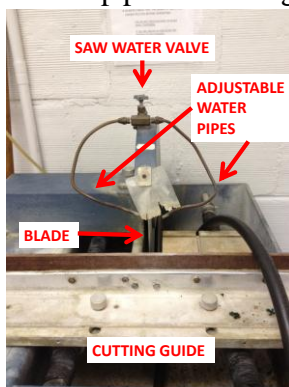


Figure 4. Saw components. Be sure that saw blade slides nicely into slot of cutting guide (not shown here).

10. Compress the black START button on the front of the saw to put saw in the ON position. The saw will not turn on until you push the foot pedal (location indicated in Figure 2).



Figure 5. Equipment in ON position. Black START button compressed.

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11. Place material to be cut on the guide and hold firmly in place with both hands, one on each side of the blade. **MAKE SURE HANDS ARE FAR FROM AND CLEAR OF THE BLADE.**
12. A firm grip must be on both ends of material to prevent one end from snapping away when cut.

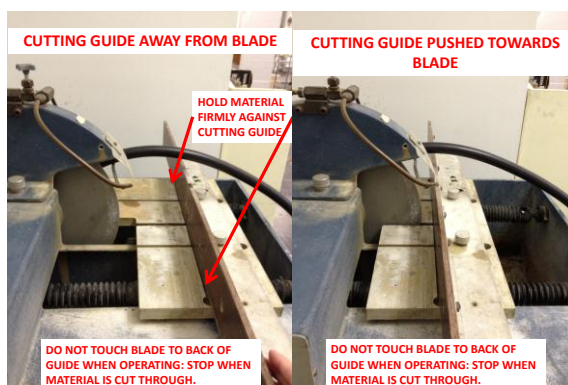


Figure 6. Saw and cutting guide alignment. Material to be cut is placed firmly against the back of the cutting guide and held firmly during cutting process.

13. Compress foot pedal to turn on saw blade (Figure 3).
14. Push guide towards the blade and cut material by applying a smooth and constant pressure to the guide until the material is cut through. Inconsistent pressure and stopping before material is cut through can cause uneven cuts and extra unnecessary debris.
15. **DO NOT PUSH GUIDE INTO SAW BLADE.** Be sure to stop as soon as the material is cut through. This will preserve the integrity of the guide as well as prevent damage to the saw blade. If this is not properly performed, one will not be allowed to operate the saw.
16. Safely remove cut pieces from saw. This can safely be done while saw is on if more materials are prepared to cut. Place next material on guide and cut as before.
17. **When finished, press foot pedal to turn off the saw.**
18. When blade stops turning, compress the red STOP button (Figure 2) to turn off the equipment.
19. Turn off the two water valves attached to the beam across from the saw (Figure 1A). It is not necessary to turn off the valve on the saw.
20. Only when water is completely drained, wrap black drain hose back into the saw basin (Figure 1B).
21. Sign the log book, failure to do so violates training and procedure requirements. This will result in the termination of use for the user.
22. Remove sign from the door.
23. Double check all shutdown procedures were followed properly.
24. **If operation procedures are not followed properly, the user will be disqualified from using the glass cutting saw.**

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9. Controls and Calibrations

Stringent visual inspections of the saw and surrounding areas are to be performed before each use. If the saw or water systems are not operating properly, notify the Subramanian group contact. **DO NOT USE** if saw blade is out of alignment or the water cooling system is not working properly.

10. Waste Disposal

The drain of the basin is attached to a hose that will be placed inside the floor drain during use. The water does not contain any harmful substances. The basin should be completely drained before removing the hose from the drain, this will prevent further rusting and degradation of the drain basin.

Any significant glass shards or remains should be placed in proper glass disposal waste containers. **GLASS DEBRIS OF ANY KIND SHOULD NEVER BE PLACED IN A REGULAR WASTE CONTAINER.** If any material (paper towels or gloves) are contaminated with glass debris, they should also be placed within a glass disposal container.

11. Relevant Documents / References

N/A

12. Signage / Summaries / Templates

Competency Training Records Form – Attached, see page 7.

- Copies of this form are to be stored and filed and in the Subramanian Research Group Glass Cutting Manual.

